Seattle Department of Planning and Development
— formerly the Department of Design, Construction and Land Use

CAM 501

client assistance memo

Making Sense of Seattle's Stormwater, Grading, and Drainage Control Code

January 2002

What Is Stormwater?

Stormwater is the water that originates from rainfall and other precipitation. In natural landscapes rain is caught by trees and vegetation, or infiltrates the soil (see **Figure 1**). In urbanized areas rainfall hits impermeable surfaces such as rooftops and paving. Instead of infiltrating the soil or being used as hydration for vegetation it must be managed through urban infrastructure systems.

Where Stormwater Goes and How It Gets There

Stormwater in the City of Seattle flows to a number of different locations depending on the site where it originates. Stormwater management has evolved over many decades, and the city's infrastructure reflects these different management approaches.

Ultimately, most stormwater ends up in the water bodies around the Seattle area but how it gets there differs. Typically stormwater flows through a natural drainage system, ditch and culvert system, public storm drain, or a public combined sewer. It is possible that the stormwater will flow through a combination of these systems before it reaches the water bodies around Seattle.

Storm and subsurface water collects on a site through footing drains, gutters, yard drains and impervious surfaces. If there is no discharge point, the footing drain discharges into the ground. Otherwise, the storm and subsurface water is conveyed to one or a combination of the following:

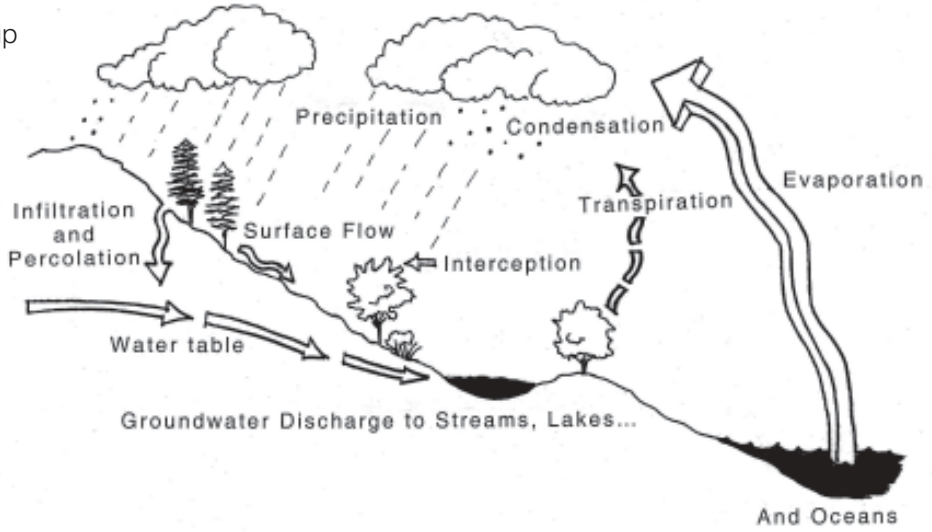
Natural drainage system—Swales, ravines, and stream corridors such as Thornton Creek or Longfellow Creek are all examples of natural drainage systems. Natural drainage systems cross privately and publicly owned property. Most stormwater that enters a natural drainage system is untreated.

Ditch and culvert system—A combination of surface ditches and culverts usually located in the public right-of-way that convey stormwater to a natural drainage system or public storm drain.

Public storm drain—Part of a public drainage system that is wholly or partially piped and is designed to carry only stormwater. Public storm drains convey stormwater to a natural drainage system or directly to receiving waters such as Lake Union or Lake Washington.

Public combined sewer—A publicly owned and maintained sewage system that carries stormwater and sewage to a treatment facility. The treated water is released into the Puget Sound.

Figure 1. Hydrologic Cycle



City of Seattle
Department of Planning & Development
Gregory J. Nickels, Mayor Diane Sugimura, Director
700 5th Avenue, Suite 2000
P.O. Box 34019
Seattle, WA 98124-4019
(206) 684-8600

Why Stormwater Matters

In a natural setting stormwater infiltrates the soils of meadows and wetlands, and collects on the surface of trees and vegetation. It is released slowly throughout the year to streams, lakes and estuaries (see **Figure 2**).

With urban growth much of this natural system has been replaced with impervious or disturbed surfaces such as rooftops, roadways, and construction sites. As stormwater flows across these surfaces it collects pollutants such as car oil, gasoline, soaps, pesticides, and herbicides. These pollutants are carried to our streams and lakes. Due to limited infiltration there is also much more stormwater, and it flows at an accelerated rate. This can cause erosion to hillsides and stream banks (see **Figure 2**).

Proper management of urban stormwater is critical for numerous reasons:

- Minimizes damage to private/public property caused by flooding, landslides, and erosion.
- Minimizes pollution in the creeks, lakes, and bays in which we boat, swim and fish.
- Helps maintain water quality and quantity necessary to support aquatic species.
- Recognizes that we live in a region that is interconnected by its water resources.
- Preserves the natural infrastructure in our cities.

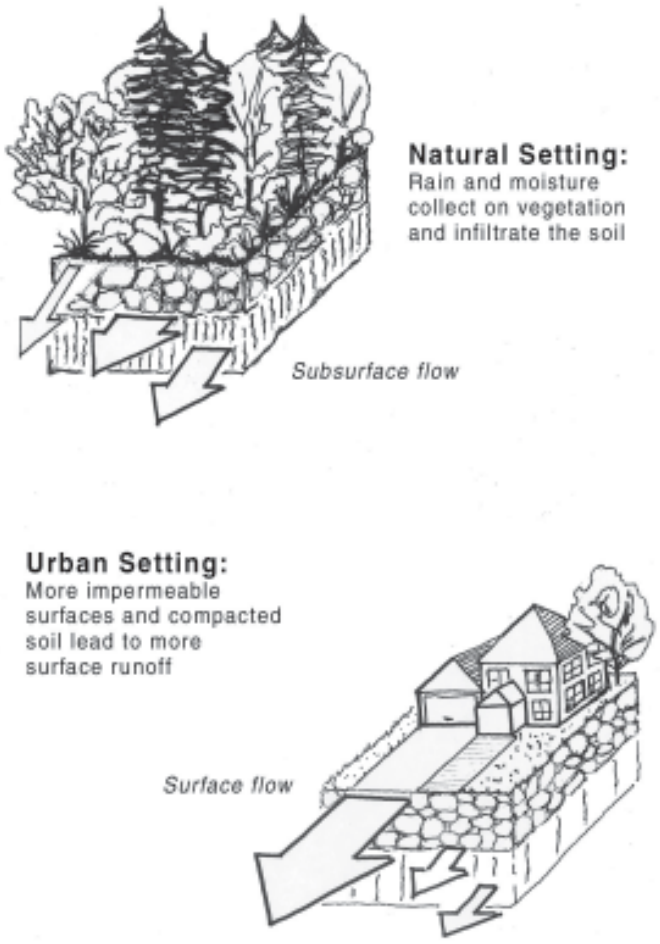
How the City Manages Stormwater

Stormwater is managed through Seattle's Stormwater, Grading and Drainage Code (Ch. 22.800-22.808 of the Seattle Municipal Code) and four associated DPD Director's Rules. These requirements all work together to provide a comprehensive framework for managing the quality and quantity of stormwater. The code prescribes regulations that provide protection to property, the environment, public interests, surface waters, and receiving waters. The regulations set forth in the code also meet the requirements of state and federal laws.

The following Director's Rules (DRs) provide technical requirements, applicability, and clarification of the code:

Construction Stormwater Control Technical Requirements Manual (DR 16-2000): This manual details temporary erosion and sediment control technical requirements in addition to plan submittal requirements that help ensure controls are implemented. Physical, structural, and/or managerial practices during construction are described in the context of a Construction Stormwater Control Plan, which is required for all activities when drainage control review is mandated.

Figure 2. Natural and Urban Settings



Source Control Technical Requirements Manual (DR 17-2000): Source control requirements are designed to prevent pollution at the source and prevent contamination of stormwater for all discharges and new development. This manual establishes when source control requirements apply. It details both structural and operational source controls for high risk pollution-generating activities, distinguishing between existing and proposed developments. It also address operational source control measures, such as maintenance, for all discharges.

Flow Control Technical Requirements Manual (DR 26-2000): This manual provides technical requirements and guidance necessary for controlling the

discharge rate of stormwater runoff set forth in the code. Flow control options for managing discharge rates are provided. Submittal requirements are described, including the Standard Drainage Control Plan and Comprehensive Drainage Control Plan (for large projects).

Stormwater Treatment Technical Requirements Manual (DR 27-2000): Technical requirements for designing, constructing, and maintaining treatment facilities are designed to remove certain pollutants from stormwater runoff before they are able to enter a receiving water body. This manual establishes when treatment is required. Designs for various types of facilities are provided, as well as a landscape management plan and alternative treatment technology.

Determining If Your Project Needs Review

Land disturbing activity or new and replaced impervious surface of 750 square feet or more requires Drainage Control Review. **Figure 3** shows the thresholds between a Standard Drainage Control Review and a Comprehensive Drainage Control Review.

Figure 3. Drainage Control Plan Review

DRAINAGE CONTROL PLAN	
Standard	**Comprehensive**
750 square feet or more of land-disturbing activity or applications where a grading permit is required	5,000 square feet or more of impervious surface, or 1 acre or more of land-disturbing activity

A Standard Drainage Control Plan can be completed by the applicant. A Comprehensive Drainage Control Plan must be prepared by a licensed civil engineer. For submittal requirements, please see the Stormwater, Grading and Drainage Control Code (Chapter 22.802.020).

Project Requirements

The requirements for projects are determined by three factors:

- the extent of the project (square footage of land-disturbing activity or new and replaced impervious surface),
- the drainage destination, and
- the activities that will occur on site.

See **Figure 4** for a summary of Code and Director's Rules requirements arranged by project size and drainage desitnation.

Access to Information

Links to electronic versions of DPD **Client Assistance Memos (CAMs), Director's Rules**, and **Codes** are available on the "Publications" and "Codes" pages of our website at **www.seattle.gov/dpd**. Paper copies of these documents, as well as additional regulations, are available from our Public Resource Center, located on the 20th floor of Key Tower at 700 Fifth Avenue in downtown Seattle, (206) 684-8467.

Figure 4: Code and Director's Rules Requirements by Project Size and Drainage Destination

PROJECT THRESHOLDS	DRAINAGE DESTINATION		
	Receiving Water Body[1]	***Class A or B Riparian Corridor[2]*** *(Excluding Bitter & Haller Lakes)*	***Public Combined Sewer***
Between 750 sq. ft and 2000 sq. ft of new/ replaced impervious surface or less than one acre of land disturbing activities	No flow control No treatment required Source control may be required for high-risk pollution-generating activities[3] Construction Stormwater Control Checklist or Plan Required	No flow control No treatment required Source control may be required for high-risk pollution-generating activities[3] Construction Stormwater Control Checklist or Plan Required	No flow control No treatment required Source control may be required for high-risk pollution-generating activities Construction Stormwater Control Checklist or Plan Required
2000-5000 sq. ft of new/ replaced impervious surface	No flow control No treatment required Source control may be required for high-risk pollution-generating activities[3] Construction Stormwater Control Checklist or Plan required	25-year detention required No treatment required Source control may be required for high-risk pollution-generating activities[3] Construction Stormwater Control Checklist or Plan required	25-year detention required No treatment required No source control required Construction Stormwater Control Checklist or Plan required
Over 5000 sq. ft of new/ replaced impervious surface or one or more acre of land disturbance	No flow control Treatment may be required[4] Source control may be required for high-risk pollution-generating activities[3] Large Project Construction Stormwater Control Plan Required	100-year detention required Treatment may be required[4] Source control may be required for high-risk pollution-generating activities[3] Large Project Construction Stormwater Control Plan required	25-year detention required No treatment required No source control required Large Project Construction Stormwater Control Plan required

[1] Receiving Water Bodies are the Duwamish River, Puget Sound, Lake Washington, Lake Union, and the Lake Washington Ship Canal, and other receiving waters designated by the Director of SPU as having the capacity to receive drainage discharge.

[2] Class A Riparian Corridors are stable established streams and lakes that flow year-round and/or support salmonoids and include but are not limited to, corridors that have an established floodplain as mapped by FEMA Flood Insurance Program. Examples include Longfellow, Thornton, Pipers, Ravenna, Mapes, Deadhorse/Mill, Maple Leaf, and Little Brook Creeks. Class B Riparian Corridors are not mapped by FEMA and are intermittent streams without salmonoids that still demonstrate a high water mark. Excludes Bitter and Haller Lake.

[3] High-risk pollution-generating activities are the following: fueling operations; vehicle, equipment or building washing; truck or rail loading and unloading of liquid or solid materials; liquid storage in stationary above-ground tanks; outside portable container storage of liquids, food wastes, or dangerous wastes; outside storage of non-containerized bulk materials, by-products or finished products; outside manufacturing activity; landscape construction or maintenance. (For more detail, see DR 17-2000, "Source Control Technical Requirements Manual.")

[4] The Basic Treatment Requirement Threshold is defined in DR 27-2000, "Stormwater Treatment Technical Requirements," as:

a. 5,000 sf new, or one acre of accumulative new and replaced roof made with uncoated metal projects; road surface accessible by vehicle, including bike lanes within that portion of the roadway accessible by vehicle; uncovered portion of paved driveway; uncovered portion of parking lot, including all areas accessible by vehicle; unfenced fire lane; or airport runway.

b. One acre of accumulative new and replaced vegetative cover or exposed soil subject to the use of pesticide and fertilizers, including lawns, golf courses, landscaped areas, parks and sports fields, unless a landscape management plan is submitted and approved by the Director of SPU or DPD.

c. Containment areas for wash pads, uncovered non-containerized outside storage, or uncovered outside manufacturing activity.